

OBSERVATIONS ON DISEASES IN PINE AND EUCALYPTUS PLANTATIONS IN SOUTH AFRICA*

M. J. WINGFIELD¹ and P. S. KNOX-DAVIES²

ABSTRACT

Keywords: *Eucalyptus*, forest tree diseases, *Pinus*.

Recent observations on diseases in *Pinus* and *Eucalyptus* plantations in South Africa are reported. *Diplodia pinea* was found associated with a wide range of disease symptoms. Other diseases noted were Armillaria root rot, and root diseases caused by *Vorticicliadiella alacris*, *Phytophthora cinnamomi*, *Polyporus baudoni* and *Rhizina undulata*.

Uittreksel

WAARNEMINGS VAN SIEKTES IN DENNE- EN BLOEKOMPLANTASIES IN SUID-AFRIKA

Onlangse waarnemings in verband met siektes van Pinus- en Eucalyptus-aanplantings in Suid-Afrika word aangeteken. *Diplodia pinea* is met 'n wye reeks simptome geassosieer. Ander belangrike siektes aangeteken was *Armillaria*-wortelverrotting, asook wortelsiektes veroorsaak deur *Vorticicliadiella alacris*, *Phytophthora cinnamomi*, *Polyporus baudoni* en *Rhizina undulata*.

Résumé

OBSERVATIONS SUR LES MALADIES DES PLANTATIONS DE PINS ET D'EUCALYPTUS EN AFRIQUE DU SUD

Des observations récentes sur les plantations de Pinus et d'Eucalyptus en Afrique du Sud sont rapportées. *Diplodia pinea* a été trouvé être associé avec une large variété de symptômes de la maladie. D'autres maladies notées furent la pourriture radiculaire *Armillaria*, et des maladies des racines causées par *Vorticicliadiella alacris*, *Phytophthora cinnamomi*, *Polyporus baudoni* et *Rhizina undulata*.

INTRODUCTION

South Africa has poor resources of indigenous forests and the forestry industry is dependent on "pure" plantings of exotic trees, especially *Pinus* spp. and *Eucalyptus* spp. Such "pure" plantings are vulnerable to forest tree diseases but, in the past, disease losses have been slight (Lückhoff, 1964). There has therefore been relatively little research work on forest tree diseases in South Africa. This paper reports observations made in a survey during 1978 and 1979 of local forest plantation diseases, with comments on previous studies.

OBSERVATIONS

Diplodia pinea diseases

Diplodia pinea (Desm.) Kickx is the most important pathogen in pine plantations in South Africa (Lückhoff, 1964; Van der Westhuizen, 1968). It has been associated with die-back of *Pinus patula* Schlect. & Cham., *P. pinaster* Ait. and *P. radiata* D. Don. after hail damage (Kotzé, 1935; Laughton, Elaine M., 1937; Lückhoff, 1964). However, *P. pinaster* and *P. radiata*, the species most susceptible to die-back, have generally been restricted to areas where hail is infrequent (Kotzé, 1935; Laughton, Elaine M., 1937; Lückhoff, 1964). *P. patula* is still planted in the summer rainfall areas and, according to reports by foresters, extensive die-back occurs after hail damage.

In the present study, *D. pinea* was commonly associated with a number of different disease symptoms, including bark cankers and die-back after hail, twig blight, dead top of *P. radiata*, root rot and insect damage.

Small cankers exuding resin (Fig. 1 and 2) were seen on 20-25 year old *P. radiata* in the Eastern Cape Province approximately two years after hail damage. *Diplodia* die-back after hail was recorded on *P. caribaea* Morelet in Zululand, *P. patula* in the Natal Midlands, Eastern Transvaal and Swaziland and *P. radiata* in the Eastern Cape. *P. elliotii* Engelm. & Vasey, and *P. taeda* L. are widely planted in Natal and Transvaal where hail damage occurs and, although they are considered to be relatively resistant to *D. pinea* (Kotzé, 1935; Laughton, Elaine M., 1937; Lückhoff, 1964), the pathogen was isolated from dying, hail-damaged trees in some stands.

Diplodia twig blight (Fig. 3) was found in all areas surveyed, but was not necessarily associated with hail damage. Near Bulwer (Natal) 2-3 year old *P. patula* showed extensive mortality after twig blight.

Dead top of *P. radiata* was widespread in the Southern and Eastern Cape. *D. pinea* was consistently isolated from dead tops which, according to foresters in the area, had developed in the absence of hail damage. Laughton F. S., (1937) made a similar observation and suggested that alternating conditions of waterlogging and drought increase the susceptibility of *P. radiata* to *D. pinea*. In Australia, *D. pinea* has been associated with dead top of *P. radiata* on moisture-stressed and overstocked sites (Millikan & Anderson, 1957; Stahl, 1968; Wright & Marks, 1971), but it has also been induced in the absence of the pathogen by subjecting trees in the glasshouse to moisture stress (Millikan & Anderson, 1957).

D. pinea has recently been found associated with a serious root disease of *P. elliotii* and *P. taeda* in Eastern Cape, Eastern Transvaal, Natal and Swaziland (Wingfield & Knox-Davies, 1980a). Characteristic symptoms were dark blue radial lesions in the young roots (Fig. 4) extending into the larger lateral roots and up the trunk of the tree (Fig. 5). Needles became chlorotic and were shed. *P. taeda* was the most susceptible host and the disease was always associated with stress such as overstocking, drought and poor site conditions (Wingfield & Knox-Davies, 1980a).

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¹ Plant Protection Research Institute, Private Bag X5017, Stellenbosch 7600

² Department of Plant Pathology, University of Stellenbosch, Stellenbosch 7600

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